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Thermoelectric Materials of the Future

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Today, more than ever before, means must be found to apply the full power of modern materials science to the important problem of efficient and environmentally friendly energy conversion devices. Fortunately, the growth of materials science presents a variety of new experimental and theoretical techniques with the potential to crack the ZT barrier and usher in a new generation of high performance thermoelectric technology. From Kondo materials, thin-films and quantum wells to novel binary and ternary semiconductors, the number of recent suggestions is almost overwhelming. This paper will survey various possibilities and discuss the key experimental and theoretical questions which need to be resolved.